

WHAT IS CLAIMED IS:

1 1. A suspension assembly including a load beam and a flexure supporting
2 a slider, said flexure comprising:
3 a first supporting area connected to said load beam on a leading end side;
4 a second supporting area connected to said load beam on a supporting end
5 side;
6 a flexure tongue provided with a supporting area of said slider, a dimple
7 contact point, and a leading edge;
8 a metal layer including:
9 a first loop spring structure extending from said first supporting area so as to
10 support said flexure tongue and having a parameter for giving stiffness to said flexure tongue;
11 and
12 a second loop spring structure extending from said second supporting area so
13 as to support said flexure tongue and having a parameter for giving stiffness to said flexure
14 tongue, a value of said parameter being selected in such a manner that said second loop
15 spring structure gives a stiffness smaller than the stiffness said first loop spring structure
16 gives to said flexure tongue; and
17 a wiring layer laminated on said metal layer in said second supporting area
18 and extendedly branching from said second supporting area toward said slider.

1 2. The suspension assembly according to claim 1, wherein said first loop
2 spring structure and said second loop spring structure constitute a pair of strip-shaped arms
3 each formed of the metal layer.

1 3. The suspension assembly according to claim 2, wherein each of said
2 parameters of said first and second loop spring structures is selected as one or a combination
3 of two or more from the group consisting of a material, a path length, a thickness, a width,
4 and a path shape of the strip-shaped arms formed of said metal layer.

1 4. The suspension assembly according to claim 2, wherein said metal
2 layer is a stainless steel having a thickness ranging from about 0.015 mm to 0.025 mm.

1 5. The suspension assembly according to claim 4, wherein the path length
2 of said second loop spring structure is about 1.2 times or more as long as the path length of
3 said first loop spring structure.

1 6. The suspension assembly according to claim 4, wherein either the
2 width of said first loop spring structure or the width of said second loop spring structure is
3 about 0.150 mm or less.

1 7. The suspension assembly according to claim 4, wherein said first
2 supporting area is connected to said load beam at a first fixing point passing through a center
3 line of said load beam, said second supporting area is connected to said load beam at a second
4 fixing point passing through a center line of said load beam, the pair of strip-shaped arms
5 constituting said first loop spring structure extends from an area near said first fixing point in
6 said first supporting area, and the pair of strip-shaped arms constituting said second loop
7 spring structure extends from an area near said second fixing point in said second supporting
8 area.

1 8. The suspension assembly according to claim 7, wherein a distance
2 from said dimple contact point to said second fixing point is about 1.5 times or more as long
3 as a distance from said first fixing point to said dimple contact point.

1 9. The suspension assembly according to claim 7, wherein the distance
2 from said first fixing point to said dimple contact point is about 1.25 mm or less.

1 10. The suspension assembly according to claim 1, wherein said first loop
2 spring structure and said second loop spring structure support said flexure tongue at a point
3 on a side of the leading edge in relation to a center of the supporting area of said slider.

1 11. The suspension assembly according to claim 1, wherein said first loop
2 spring structure and said second loop spring structure are provided with a common portion
3 and said common portion, instead of said first loop spring structure and said second loop
4 spring structure, supports said flexure tongue.

1 12. The suspension assembly according to claim 1, wherein said wiring
2 layer includes a copper layer and a dielectric layer.

1 13. The suspension assembly according to claim 12, wherein a thickness of
2 said metal layer ranges from about 0.015 mm to 0.025 mm, a thickness of said dielectric layer
3 ranges from about 0.005 mm to 0.020 mm, and a thickness of said copper layer ranges from
4 about 0.005 mm to 0.020 mm.

1 14. The suspension assembly according to claim 1, wherein said dimple
2 contact point is given as a contact portion between a dimple formed on said load beam and
3 said flexure tongue.

1 15. The suspension assembly according to claim 1, wherein said dimple
2 contact point is given as a contact portion between a dimple formed on said flexure and said
3 load beam.

1 16. The suspension assembly according to claim 1 further comprising a
2 limiter, formed of part of said metal layer, extending from said flexure tongue.

1 17. A suspension assembly including a load beam and a flexure connected
2 to said load beam and supporting a slider, said flexure comprising:
3 a flexure tongue provided with a supporting area of said slider;
4 a first spring structure supporting a first supporting area connected to said load
5 beam on a leading end side and said flexure tongue in such a manner as to extend from said
6 first supporting area for giving a dominant stiffness to said flexure tongue;
7 a second spring structure supporting a second supporting area connected to
8 said load beam on a supporting end side and said flexure tongue in such a manner as to
9 extend from said second supporting area for giving an auxiliary stiffness to said flexure
10 tongue; and
11 a wiring layer laminated on said metal layer in said second supporting area
12 and extendedly branching from said second supporting area toward said slider.

1 18. The suspension assembly according to claim 17, wherein a stiffness
2 given by said second spring structure to said flexure tongue is about 40% or less of a stiffness
3 given by said first spring structure and said second spring structure to said flexure tongue.
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1 19. The suspension assembly according to claim 18, wherein said stiffness
2 is a pitch stiffness or a peel stiffness of said flexure tongue.

1 20. A suspension assembly including a load beam and a flexure provided
2 with a metal layer and supporting a slider, said flexure comprising:

3 a supporting area composed of said metal layer and supported by said load
4 beam;

5 a flexure tongue including a supporting area of said slider, a dimple contact
6 point, and a leading edge, and formed of part of said metal layer; and

7 a supporting structure extending from the supporting area supported by said
8 load beam for supporting said flexure tongue at a position on a side of said leading edge in
9 relation to a center of a mounting position of said slider.

1 21. The suspension assembly according to claim 20, wherein said leading
2 edge is disposed on a leading end side of said load beam with respect to a trailing edge.

1 22. The suspension assembly according to claim 20, wherein said leading
2 edge is disposed on a supporting end side of said load beam with respect to a trailing edge.

1 23. A rotary disk storage device, comprising:
2 a rotary disk;
3 a head reading and writing data from and to said rotary disk, or either reading
4 or writing data from or to said rotary disk;
5 a slider mounted with said head;
6 a suspension assembly supporting said slider; and
7 an actuator mechanism supporting said suspension assembly, said suspension
8 assembly being one as recited in claim 1.

1 24. The rotary disk storage device according to claim 23, further
2 comprising a ramp in which said slider is retracted.

1 25. The rotary disk storage device according to claim 23, wherein said
2 actuator mechanism turns about a pivot shaft above a surface of said rotary disk.

1 26. A rotary disk storage device, comprising:
2 a rotary disk;
3 a head reading and writing data from and to said rotary disk, or either reading
4 or writing data from or to said rotary disk;
5 a slider mounted with said head;
6 a suspension assembly supporting said slider; and

7 an actuator mechanism supporting said suspension assembly, said suspension
8 assembly being one as recited in claim 17.

1 27. The rotary disk storage device according to claim 26, further
2 comprising a ramp in which said slider is retracted.

1 28. The rotary disk storage device according to claim 26, wherein said
2 actuator mechanism turns about a pivot shaft above a surface of said rotary disk.

1 29. A rotary disk storage device, comprising:
2 a rotary disk;
3 a head reading and writing data from and to said rotary disk, or either reading
4 or writing data from or to said rotary disk;
5 a slider mounted with said head;
6 a suspension assembly supporting said slider; and
7 an actuator mechanism supporting said suspension assembly, said suspension
8 assembly being one as recited in claim 20.

1 30. The rotary disk storage device according to claim 29, further
2 comprising a ramp in which said slider is retracted.

1 31. The rotary disk storage device according to claim 29, wherein said
2 actuator mechanism turns about a pivot shaft above a surface of said rotary disk.